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# Nebraska Monthly Economic Indicators: March 21, 2018

Eric Thompson
*University of Nebraska-Lincoln*, ethompson2@unl.edu

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**Prepared by the UNL College of Business, Bureau of Business Research**

**Author**: Dr. Eric Thompson



***Summary:*** *The Leading Economic Indicator – Nebraska (LEI-N)*[1] *rose by 1.03% during February of 2018. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests that the Nebraska economy will grow steadily through the third quarter of 2018. Solid business expectations and a strong labor market were the primary reasons for the increase in the LEI-N. Respondents to the February Survey of Nebraska Business reported plans to increase sales and employment at their businesses over the next six months. Further, there was a decline in initial claims for unemployment insurance during February, which is a positive sign for the labor market. In terms of negative components, there was a small increase in the value of the U.S. dollar, which increases competitive pressure for Nebraska exporters.*

## Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during February 2018 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 1.03% in February.

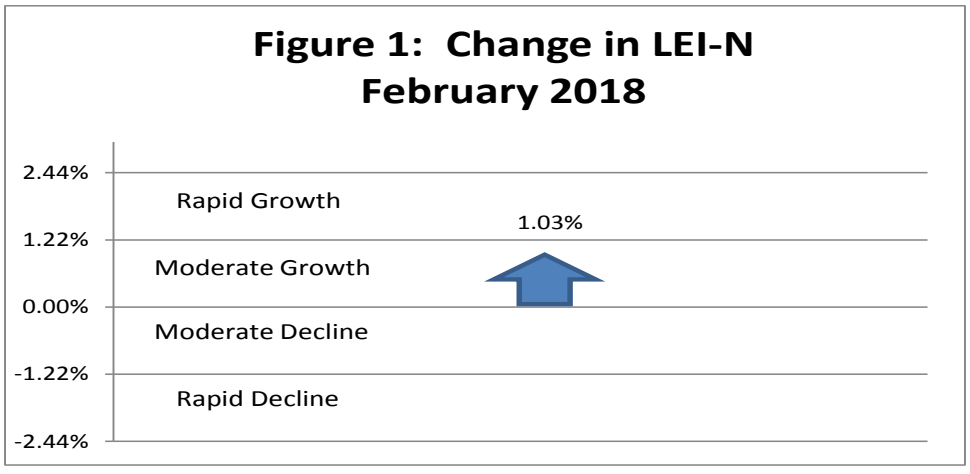



Figure 2 shows the change in the LEI-N over the last six months. The indicator has risen consistently over the last 6 months. Taken together, these results suggest the Nebraska economy will grow through the third quarter of 2018.

[1] The author would like to thank Dr. William Walstad for helping to design the LEI-N.

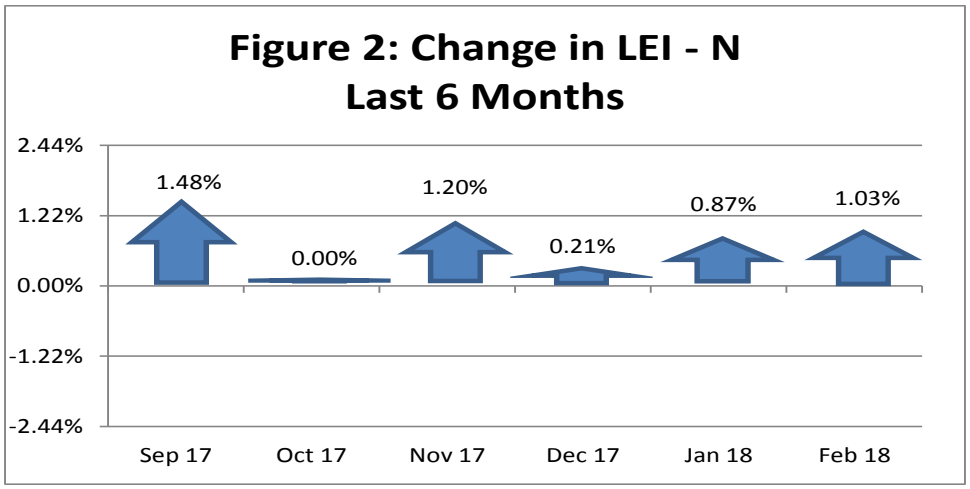
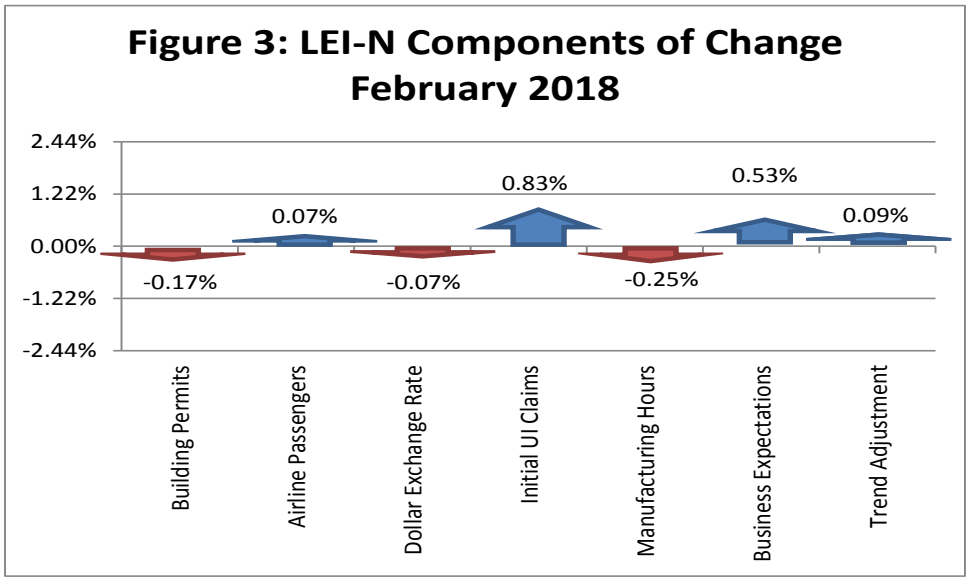



Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during February 2018. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Three of six LEI-N components rose during February. Business expectations were positive as respondents to the February *Survey of Nebraska Business* predicted growth in both sales and employment at their businesses over the next six months. Further, in a positive sign for the labor market, there was a drop in initial claims for unemployment insurance during the month. In terms of negative components, there was a small increase in the value of the U.S. dollar during February, which increases competitive pressures on Nebraska exporters, including in agriculture and manufacturing. Note that the trend adjustment component pictured in Figure 3 is discussed on page 5.



# Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N rose by 0.51% during February 2018, as seen in Figure 4.

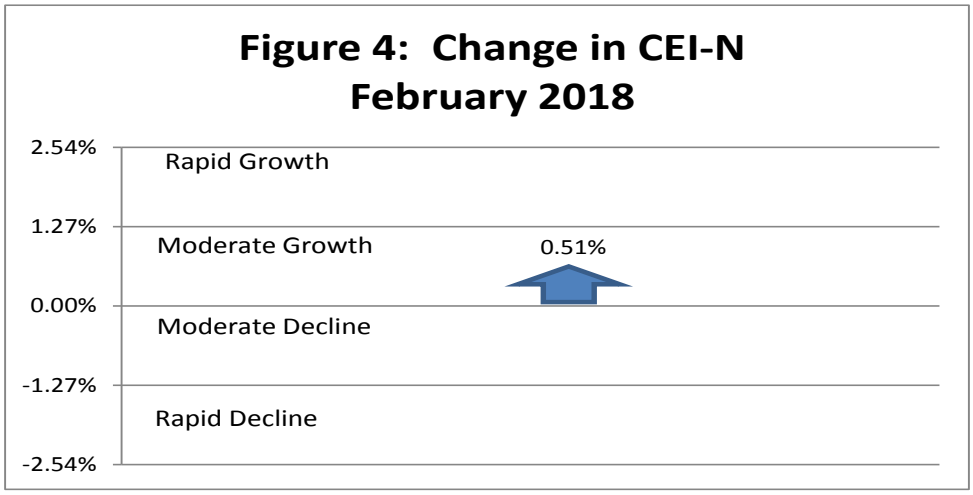
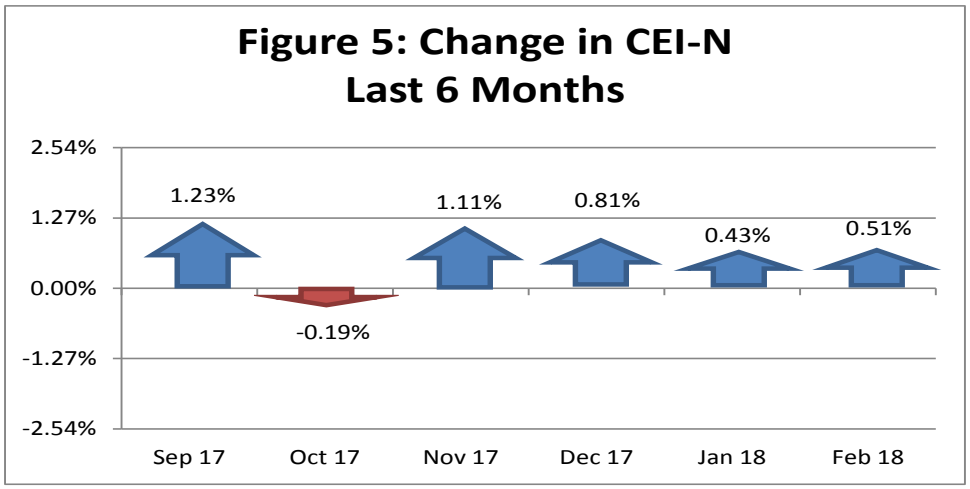



Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose over the last four months and during five of the last six months. Results show that the Nebraska economy expanded solidly at the end of 2017 and during early 2018.




Three of four components of the CEI-N rose during February. Agricultural commodity prices rose during the month and there was a modest increase in private sector wages. Respondents to the February *Survey of Nebraska Business* reported a mixed picture, including modest increases in sales and a slight decline in employment in recent months. Electricity sales declined after adjusting for weather and seasonal factors. A detailed discussion of the components of the CEI-N and LEI-N can be found at www.cba.unl.edu in *Technical Report: Coincident and Leading Economic Indicators- Nebraska.*

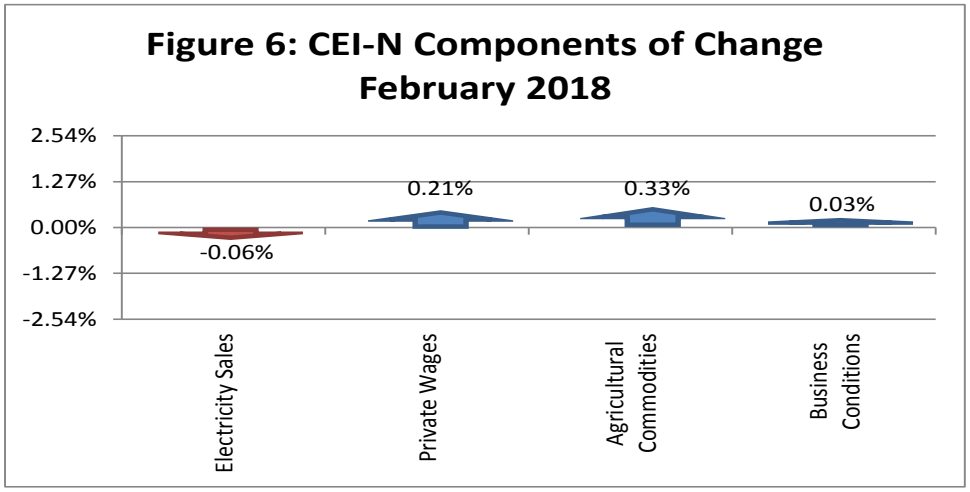
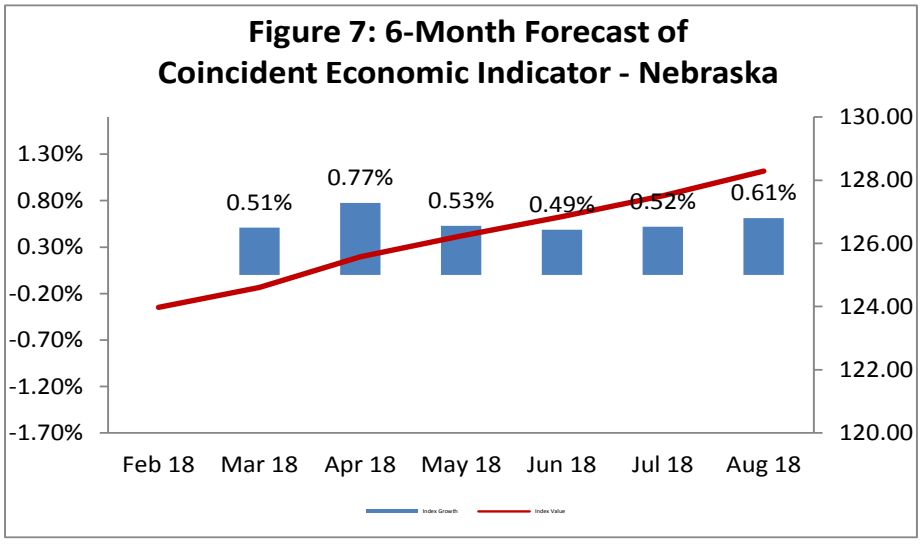



Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through the third quarter of 2018. These expectations are consistent with the improvement in the LEI-N over the last six months (Figure 2).



# Weights and Component Shares

Table 1 shows the weights used to aggregate the individual components into the LEI-N and CEI-N. The weights are the inverse of the "standardized" standard deviation of each component variable. The term standardized simply means that the inverse standard deviations are adjusted proportionately to sum to 1. This weighting scheme makes sense since individual components that are more stable have smaller standard deviations, and therefore, a larger inverse standard deviation. A large movement in a typically stable economic series would provide a more powerful signal of economic change than a large movement in a series with significant month-to-month fluctuations.

**Table 1: Component Weights for LEI-N and CEI-N**

| Leading Economic Indicator - Nebraska | | | | Coincident Economic Indicator - Nebraska | | | |
|---|---|---|---|---|---|---|---|
| Variable | Standard Deviation | Inverse STD | Weight (Inverse STD Standardize) | Variable | Standard Deviation | Inverse STD | Weight (Inverse STD Standardize) |
| SF Housing Permits | 13.4712 | 0.0742 | 0.0349 | Electricity Sales | 4.6258 | 0.2162 | 0.1606 |
| Airline Passengers | 3.3234 | 0.3009 | 0.1413 | Private Wages | 1.7807 | 0.5616 | 0.4171 |
| Exchange Rate | 1.1989 | 0.8341 | 0.3918 | Agricultural Commodities | 3.3158 | 0.3016 | 0.2240 |
| Initial UI Claims | 10.9683 | 0.0912 | 0.0428 | Survey Business Conditions | 3.7435 | 0.2671 | 0.1984 |
| Manufacturing Hours | 1.6817 | 0.5946 | 0.2793 | | | | |
| Survey Business Expectations | 4.2715 | 0.2341 | 0.1100 | | | | |

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between January and February of 2018. Weights (from Table 1) are multiplied by the change to calculate the contribution of each component. Contributions are converted to percentage terms and summed. Note that in Table 2 a trend adjustment factor is utilized in calculating LEI-N. This is done because LEI-N historically under-predicts CEI-N by 0.09% per month. The U.S. Leading Economic Indicator also has a trend adjustment.

**Table 2: Component Contributions to the Change in Leading Economic Indicator**

| Leading Economic Indicator - Nebraska | | | | | | |
|---|---|---|---|---|---|---|
| | Component Index Value (May 2007=100) | | | | | |
| Component | Current | Previous | Difference | Weight | Contribution | Percentage Contribution (Relative to Previous LEI-N) |
| SF Building Permits | 83.85 | 90.88 | -7.03 | 0.03 | -0.24 | -0.17% |
| Airline Passengers | 108.18 | 107.45 | 0.74 | 0.14 | 0.10 | 0.07% |
| U.S. Dollar Exchange Rate (Inverse) | 88.92 | 89.19 | -0.27 | 0.39 | -0.11 | -0.07% |
| Initial Unemployment Insurance Claims (Inverse) | 157.05 | 129.52 | 27.53 | 0.04 | 1.18 | 0.83% |
| Manufacturing Hours | 91.92 | 93.18 | -1.26 | 0.28 | -0.35 | -0.25% |
| Survey Business Expectations[1] | 56.89 | | 6.89 | 0.11 | 0.76 | 0.53% |
| Trend Adjustment | | | | | 0.13 | 0.09% |
| Total (weighted average) | 143.49 | 142.02 | | | 1.47 | 1.03% |

[1] Survey results are a diffusion Index, which is always compared to 50

**Table 3: Component Contributions to the Change in Coincident Economic Indicator**

| Coincident Economic Indicator - Nebraska | | | | | | |
|---|---|---|---|---|---|---|
| | Component Index Value (May 2007=100) | | | | | |
| Component | Current | Previous | Difference | Weight | Contribution | Percentage Contribution (Relative to Previous CEI-N) |
| Electricity Sales | 178.29 | 178.77 | -0.48 | 0.16 | -0.08 | -0.06% |
| Private Wage | 112.39 | 111.76 | 0.63 | 0.42 | 0.26 | 0.21% |
| Agricultural Commodities | 118.37 | 116.56 | 1.81 | 0.22 | 0.41 | 0.33% |
| Survey Business Conditions[1] | 50.21 | | 0.21 | 0.20 | 0.04 | 0.03% |
| Total (weighted average) | 124.61 | 123.98 | | | 0.63 | 0.51% |

[1] Survey results are a diffusion Index, which is always compared to 50

# Performance of the LEI-N and CEI-N

Further information is available on both economic indicators to demonstrate how well the CEI-N tracks the Nebraska economy and how well the LEI-N leads the CEI-N. Figure 8 shows the value of CEI-N and the real gross state product (real GDP) in Nebraska for 2001 through 2016. Annual real gross state product data is provided by the Bureau of Economic Analysis, U.S. Department of Commerce, and quarterly values were estimated using quarterly earnings data. CEI-N closely tracks Nebraska real GDP for the period. The correlation coefficient between the two pictured series is 0.94.

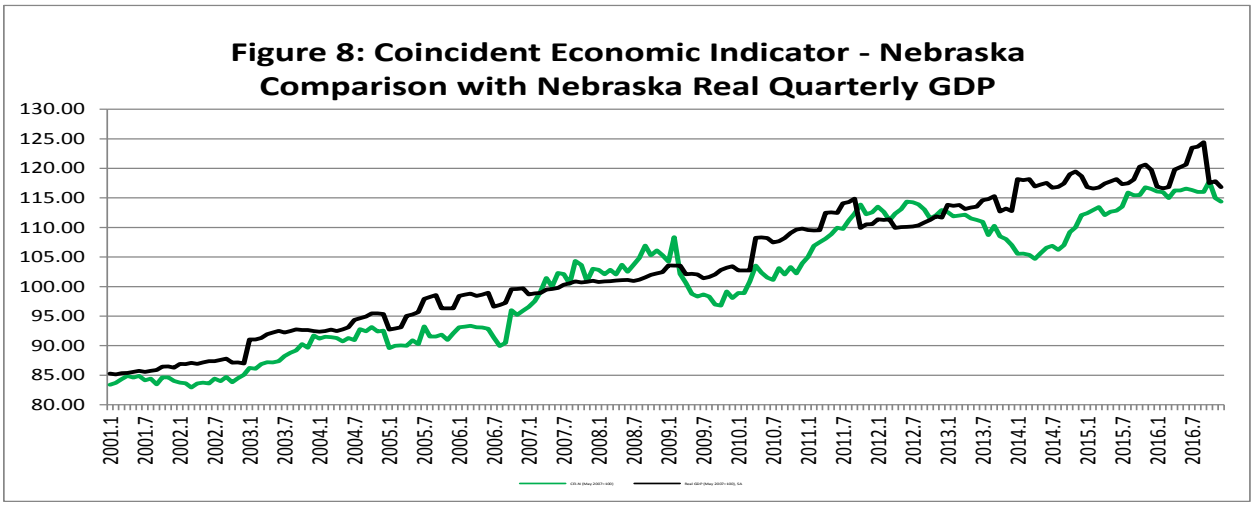



Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N closely track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.91.